

ABSTRACT OF THE DISCLOSURE

In order to determine the angular movement of an induction motor, it is generally necessary to connect some kind of sensor in the form of a tachogenerator, resolver or encoder. Some variable-speed drives determine the angular movement by assessing the wave shape generated by the drive when driving an induction motor. In this invention the method of sensing is different in two ways. One, it uses the hardware of induction motor itself as a low-power alternator producing alternating-current output with its frequency and voltage proportional to the rpm of the induction motor. Two, this method works only when the mains supply to the motor is removed either in a planned manner or accidentally. The method of self tachogeneration by an induction motor has been successfully utilized in the implementation of an uninterrupted power supply to keep supplying oil to a hydrostatic bearing in the event of sudden mains power outage. This property of an induction motor acting as a low-power alternator is due to some residual magnetism in the ferro-magnetic circuit of the squirrel-cage rotor. To implement this invention, a set of electromagnetically operated changeover switches are required, so that the low-power tachogenerator signal from the induction motor does not sink in the low impedance of the mains power. This invention enables the detection of the angular movement of any induction motor coming to a standstill after a mains outage, or rotating due to some external mechanical force on the rotor. As a result, an induction motor when not supplied with electrical power can double up as a tachogenerator to sense a movement to which it is linked mechanically in many machine-tool and industrial applications.